Editor-in-Chief's Year-End Message: 70th Anniversary and the Last Printed Issue

DEAR Readers, this year-end message is a very special one, as the IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT (TIM) celebrates its 70th anniversary and at the same time undergoes fundamental publishing changes. I am very excited to tell you about all of these, but let us start with our traditional annual evaluation of TIM and its quality metrics, which continue to impress.

Journal Quality - I am most pleased to report that in the latest Journal Citation Report (JCR), TIM has entered the first quartile (Q1) of JCR's Electrical and Electronic Engineering (EEE) category for the first time! This is an important milestone, since this category is used by the IEEE to compare its journals against non-IEEE journals published in electrical engineering. To be in Q1 of EEE means that TIM is a top journal not only in its own field of instrumentation and measurement (I&M) but also in all of electrical engineering. In addition, TIM has remained in Q1 of JCR's Instruments and Instrumentation category and continues to be the #1 general I&M journal with an Impact Factor of 3.658 compared to last year's 3.067. Other JCR metrics are also impressive.[1] The Scopus report is similarly positive: TIM easily maintains its #1 general I&M journal status with a CiteScore of 6.6 compared to last year's 3.84 and is in Q1 of the Instruments subject. Our timeliness has also improved, especially since our move to the new manuscript processing system, PeerTrack, which has led to an average submission-to-first-decision time of 28.4 days in 2020, compared to 59 days in 2019 in the old AllenTrack system.

Although in the past few years we might have become used to experience this kind of continuous and impressive improvement of TIM's quality metrics, reaching Q1 of EEE is an exceptional feat that could not have been reached without the long-term vision and years of planning that started with senior past Editor-in-Chief (EiC) Reza Zoughi and continued with junior past EiC Alessandro Ferrero and now with my continuation of their great work and successful TIM strategies. It is obvious that this good leadership was effective only because of the outstanding work of the authors, reviewers, Associate Editors (AEs), Associate EiCs, and Administrators. I sincerely thank and congratulate the whole TIM community on this fantastic and well-deserved achievement, and I hope this upward trend continues for the foreseeable future.

Editorial Board - The success of the past few years has had a huge impact on the number of submitted papers, and TIM continues to break annual submission records: we received 1844 submissions in 2019 compared to 1588 submissions in 2018 (when adjusting for the CPEM Special Issue which is every second year), and 2020 is on track to receive over 2500 submissions. Our TIM Administrators Reta Wehmeier and Laura Roach, as well as our IEEE Production Manager Sara Scudder, have done an outstanding job to keep up with the increase in submitted and accepted papers. To further deal with this fast-rising number of submissions, we have added more AEs to the editorial board, which has 94 members at the time of this writing. We are also introducing a new role, Senior Area Editor (SAE), who will be responsible to screen submissions in a specific area and assign them to AEs. An SAE must have already served as an Associate EiC and, therefore, possesses significant experience in processing submissions. In this line of thought, it is my pleasure to introduce our SAEs and Associate EiCs for 2020.

Senior Area Editors:

- Prof. Kurt Barbé, Vrije Universiteit Brussel, Brussels, Belgium. Area: medical, biomedical, and healthcare instrumentation and measurement.
- Prof. Dario Petri, University of Trento, Trento, Italy. Area: power instrumentation and measurement.
- Prof. Ruqiang Yan, Xi'an Jiaotong University, Xi'an, China. Area: automation, fault diagnosis, maintenance, and testing.

Returning Associate EiCs:

- Prof. Vedran Bilas, University of Zagreb, Zagreb, Croatia.
- Dr. George Xiao, National Research Council, Ottawa, ON, Canada.

New Associate EiCs:

- Prof. Roberto Ferrero, University of Liverpool, Liverpool, U.K.
- Prof. Daniele Fontanelli, University of Trento, Trento, Italy.

I would like to sincerely thank them for their above-and-beyond service and contributions to TIM.

TIM@IMS Conference - By now you are probably familiar with the TIM@I^{2}MTC track that started in 2018, providing the authors of TIM articles, published or e-published in a given year, with the option to present their article at next year's IEEE I^{2}MTC conference. This track has proved quite popular with 11 and 17 TIM articles presented at IEEE I^{2}MTC 2018 and 2019, respectively. It has also become the norm for the authors of TIM's *Andy Chi Best Paper Award*[2] to present their paper in this track. For I^{2}MTC 2020, we had

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[1] See TIM's metrics page: http://tim.ieee-ims.org/content/metrics

[2] http://tim.ieee-ims.org/content/award-details

26 TIM papers ready for presentation, but most were withdrawn when the conference switched to online-only due to COVID-19. We will give those authors an opportunity to present their TIM paper in 2021, if the conference is held physically. We are also considering to extend this opportunity to other Instrumentation and Measurement Society (IMS) conferences and allow authors to present their TIM paper published in a given year at any solely IMS-sponsored conference the next year. I call this *TIM@IMS Conference* program, which will be discussed in the Fall 2020 AdCom meeting.

Short Papers and Survey/Review Articles - We have increased the maximum length of short papers from three to four pages. This came out of the necessity that some potentially excellent short papers were unsuccessful in the review process because the three-page length was often not enough to address the reviewers' comments. The four-page length is also consistent with most other IEEE journals that publish short papers or letters. In addition to short papers, TIM also publishes survey/review papers. These papers serve as a one-stop-shop to bring up to speed researchers. For example, graduate students who want to start research in their thesis topic, relatively quickly and conveniently in one reading. Survey/review papers have also been successful, since we started to publish them in 2019,[3] and are gaining even more popularity.

Overlength Page Charges - As you might be aware, overlength pages are charged to both discourage verbose papers and recover expenses for papers that are too long, because IEEE charges the IMS per page for editing, composition, administration, printing, and other processing costs. The page limits can be found in the Overlength Page Charge Agreement form available on TIM's author guide webpage. To acknowledge the significant role that IMS members have played in TIM's success, as not only authors but also reviewers and AEs, the IMS AdCom recently agreed to discount overlength page charges for IMS members. Therefore, overlength charges are now U.S. $265 for non-IMS members and U.S. $220 for IMS members, with membership being checked at the time of invoicing.

The abovementioned pretty much concludes our traditional annual coverage of TIM. For more information, I invite the readers to visit TIM's website[4] which is always kept up to date, thanks to the tireless efforts of our friends at Conference Catalyst LLC. Next, let us see some very exciting news and information about publication changes and TIM's 70th anniversary, the latter with all sorts of interesting historical information and the top 70 lists that you should not miss.

I. The End of (Printed) Issues (Modernizing TIM's Publication)

The abovementioned success and the fast-rising number of submissions to TIM have also led to a huge increase in our backlog. This has become a problem because today's authors require *rapid publication*. TIM has started to receive too many requests from authors whose papers are in the backlog and whose organization does not recognize a publication unless it is assigned to a volume. These organizations do not recognize Early Access as an official publication. The reason TIM has a backlog at all is the 12 issues per year policy, which limits both the number of papers per issue and the timing of an issue. At the same time, we have noticed a sharp decline in the number of print subscribers, who constituted more than a third of IMS members 10 years ago, but are now only 8% and falling fast. This is a global trend; all journals are experiencing significant drops in print subscriptions, while the number of online readers is rapidly increasing.

Given the backlog size, the ever-rising number of submissions, the insignificant number of print subscribers compared to TIM's total readership, and the authors' demand for rapid publication, we decided to convert TIM to an online-only, volume-only, rapid-publication journal at the beginning of the year 2021. This year, we used a record of 10 000 pages to print our backlog as fast as possible until the December 2020 Issue. After that, all remaining papers in the backlog will be quickly assigned to Volume 70. From that point on, TIM will no longer have issues or a backlog. The issue you are reading now is the last issue and the last print of the journal. From 2021, when a paper is accepted, its final IEEE-edited version is assigned to a volume with an article sequence number in approximately three weeks after acceptance, assuming the authors will be timely in submitting the correct final files and responding to proof requests. At the end of each year, two sets of Table of Contents (ToC) will be published: one ToC with papers listed in order of their subject area,[5] and another ToC with papers listed in order of their type (survey, short, special section, and regular), each type also sorted based on the subject area. Since TIM will no longer have any issues, Special Issues will now be called Special Sections.

This will modernize TIM into a rapid-publication and fully digital journal which satisfies the needs of today's authors. We are very excited about this natural evolution, especially that it coincides with the 70th anniversary of TIM, indicating TIM's growth, maturity, and continuous relevance.

II. A Celebration of the 70TH Anniversary of TIM

TIM will turn to Volume 70 in 2021, indicating its 70th anniversary. It was in 1952 that the *Transactions of the IRE Professional Group on Instrumentation* was launched, which in 1955 was renamed to *IRE Transactions on Instrumentation*. Papers of both can still be accessed in IEEE Xplore. IRE was the Institute of Radio Engineers, which in 1963 merged with the American Institute of Electrical Engineers (AIEE) to form the present-day IEEE. Subsequently, in 1963, the name of the transactions was changed to the IEEE Transactions on Instrumentation and Measurement. Fig. 1 below

[3]See the list of TIM survey papers published so far: http://tim.ieee-ims.org/content/ieee-tim-survey-papers

[4]http://tim.ieee-ims.org/

[5]See TIM's 20 top-level subject areas and their detailed EDIC here: http://tim.ieee-ims.org/content/editors-information-classification-scheme-edics

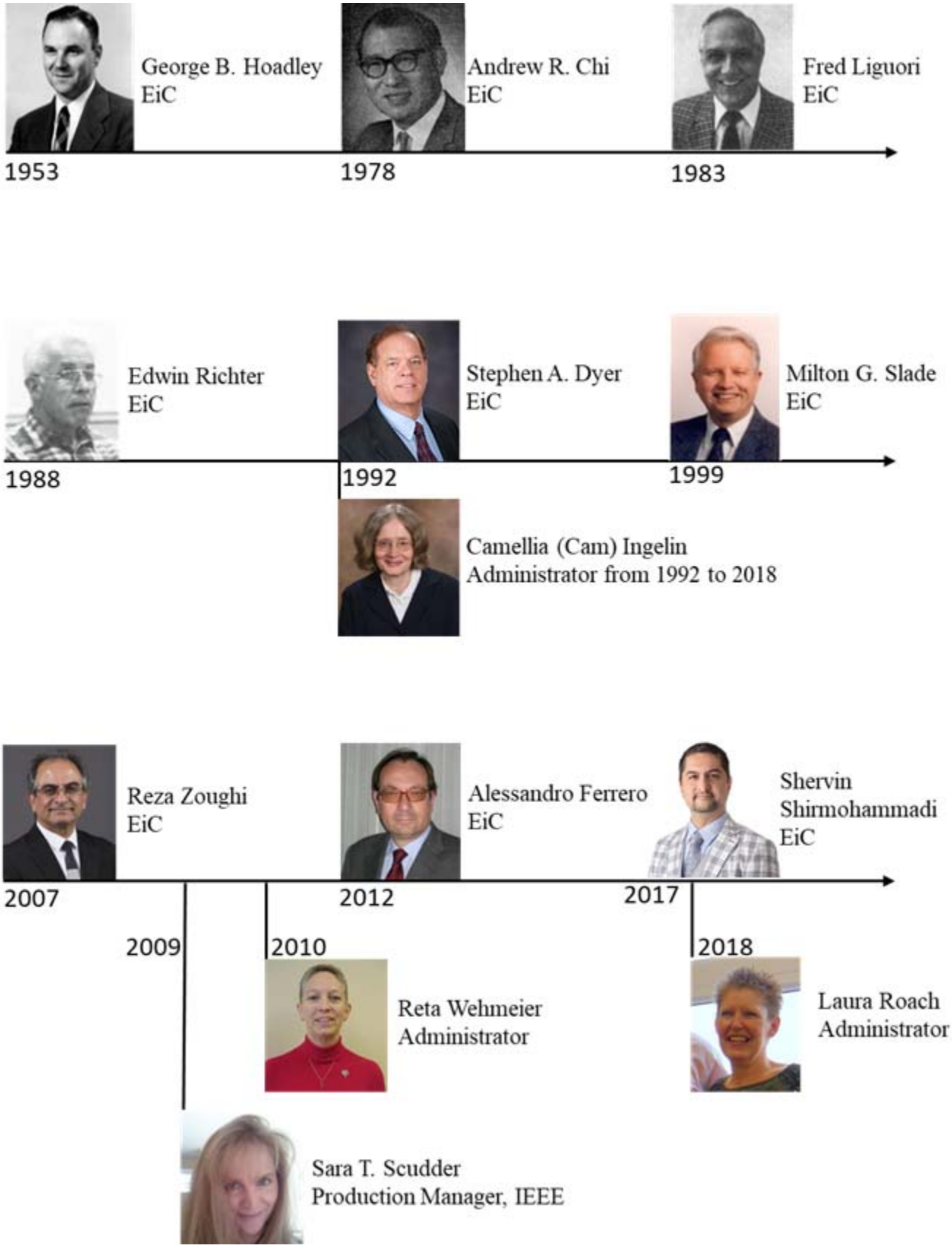
George B. Hoadley
EiC
1953
Andrew R. Chi
EiC
1978
Fred Liguori
EiC
1983
Edwin Richter
EiC
1988
Stephen A. Dyer
EiC
1992
Milton G. Slade
EiC
1999
Camellia (Cam) Ingelin
Administrator from 1992 to 2018
Reza Zoughi
EiC
2007
Alessandro Ferrero
EiC
2012
Shervin
Shirmohammadi
EiC
2017
2009
Sara T. Scudder
Production Manager, IEEE
2010
Reta Wehmeier
Administrator
2018
Laura Roach
Administrator

Fig. 1.

Fig. 2. Ed Richter carries a load of outgoing mail in 1991. The box contains papers of the June 1992 Issue, while the packages on the top contain papers going to reviewers or editing suggestions to authors. Photo courtesy of IMS NewsLetter Spring 1992, p. 14.

shows all TIM EiCs[6] and the more recent Administrators. You can see the bios of the EiCs at the bottom of TIM's Editorial Board webpage.[7] There is no EiC listed until Volume I-6, Issue 3, 1957, although historical records indicate that George B. Hoadley was EiC since 1953[8] or 1954.[9] It should also be mentioned that in 1996, Raymond S. Turgel became TIM's EiC, but he could not serve in this role due to an unexpected severe health issue, and so, Steve Dyer took over the EiC duties again.

Like other journals, TIM has gone through many transitions due to technology advancements and authors' expectations. Stephen A. Dyer, TIM's EiC from 1992 to 1999, shares some interesting insights on the challenges of the editorial process in the 1990s:

"Technological capabilities were certainly different in the early 1990s from what is available today. A typical computer would be a '486/33MHz CPU with about 120 MB of hard disk and running MS-DOS 5 or 6 (Windows 95 was yet to be); e-mail was available but primitive; the World Wide Web would wait until the mid-1990s; choices for relational database systems were few and very expensive; and the list goes on. TIM's official correspondence and the manuscripts and their various revisions were transferred by postal mail, entirely manually. I spent much of the first several months writing relational-database code in C, and using the Codebase 4.5 library of functions, so that we could automate many of the aspects of manuscript tracking. At the time, the page limit for a paper was set to five for regular papers and four for special-issue papers. We carefully measured every manuscript upon receipt to get a close estimate of its length after typesetting—I had constructed a set of templates to facilitate that operation—and we notified the author(s) of the estimated length.

The various steps in the manuscript-handling process were quite time-consuming, even after partial automation. Ed Richter had told me that he spent about 30 hours per week at the editorial task, and I was incredulous at that statement. But indeed, I found, early on, that the job required anywhere between 30 and 50 hours per week. At that point, I understood why editors had tended to be retired from their careers; as for me, I had a day job to contend with!

Editorial assistants are *absolutely* critical participants in the editorial process. Ms. Camellia Ingelin was the first assistant I hired. Described aptly by one colleague as "the nicest person in the whole world," Cammie also proved to be perhaps the most meticulous. Her degrees in English, mathematics, and library science provided her with a good background. Our process included Cam's editing each accepted manuscript for grammar before we forwarded it to IEEE Publications for copyediting, composition, printing, and mailing. On several occasions, she wound up correcting mathematical errors in the manuscripts' equations! And she would always do a final, quick proofreading of the galley proofs returned by authors. Many international authors struggled with their English to the extent that Cammie and I would completely rewrite a technically sound manuscript and then start a conversation cycle with its author to ensure that our version said what the author had intended; for this type of task, Cammie assumed the brunt of the load. She did all the abovementioned in addition to completing the tasks of measuring for length, generating correspondence, completing assembly of issues for publication, and mailing, among others.

Cammie first worked part-time, and I had another part-time assistant—first, Ms. Amy Schlotthauer and, later, Ms. Alison Mott (now Denny). Both Amy and Al had technical backgrounds, and, as with Cam, they were sharp, well organized, caring, and easy to work with. I bring honor to these three individuals: what they accomplished and their manner of accomplishment were beyond reproach. They worked with me to achieve, to the extent possible, the goals I had set for TIM.

But to move further toward those goals, we had to alter the structure of our editorial operation. As it stood, the operation comprised the editor and his assistants, three geographically oriented AEs, and a centralized cadre of reviewers. Ulrich Stumper was the AE available for submissions from Europe; Reuven Kitai for Canada; and Makoto Kanno and, later, Kenzo Watanabe for Asia. However, it turned out that most of the manuscripts from those three geographical regions were being submitted directly to the editor instead of those AEs. We had between 600 and 1000 manuscripts active at a given time, and as an Editor, I was assigning reviewers and corresponding with the authors and reviewers of roughly 90% of those manuscripts. As a result, in 1995, I began installing a new structure to become active in 1996, one familiar to us today—a

[6]The position was called *Editor* until 1997 when *Acting EiC* was used for the first time.

[7]http://tim.ieee-ims.org/content/editorial-board

[8]IMS NewsLetter, Winter 1996, p. 8.

[9]K.R. Fowler, J.B. Oakes, D. Braudaway, H. Goldberg and L. Adriano, "Measuring History in the I&M Society," *IEEE Conference on the History of Technical Societies*, 5-7 Aug. 2009, Philadelphia, PA, USA.

distributed structure comprising an Editor (now termed Editor-in-Chief, or EiC); a group of AEs (initially, to be 24), each overseeing a particular topic area; and reviewers chosen by, and reporting directly to, individual AEs."

Some of the challenges Steve has mentioned are unimaginable today. I can't even begin to think how much work would be involved if, with TIM's 2500 annual submissions now, we had to manually edit the English and the mathematical formulas or "mail" papers for the review process! Yet despite overcoming those challenges with technology, each new EiC realizes there are other challenges, as writes senior past EiC Reza Zoughi:

"In 2006, when then-EiC Milton Slade asked me to accept the position of EiC starting 2007, I was incredibly honored. However, it soon became evident that we needed an overhaul of all processes associated with TIM. Milton, who has since passed away, was a great mentor and teacher to me, and I am forever indebted to him. I also received lots of guidance by others; in particular Steve Dyer, senior past TIM EiC at the time. The only real TIM 'memory' that existed at that time was in the form of Cam Ingelin! Without Cam, TIM would not have survived. We faced many challenges: a large backlog of accepted papers; a large number of papers that were still in various stages of review and had been for many months, and some for many years; no automated submission-and-review system, other than a database program written in 1998 by Justin Dyer—authors simply emailed their paper to the EiC, who would email it to an AE, who in turn would email it to reviewers, and so on; no process for special issues, which caused many problems and became a major time sink; and no systematic process for AEs to handle papers—the list goes on.

TIM needed a *culture* change as well, which was not easy to achieve given the many people involved in the process. There were many (but not all) AEs who were receptive to change, and I invited many more to join the TIM family and help expedite our review processes and ensure that we had technically competent AEs for all areas covered by TIM. At that time, TIM was published only six times per year and was immediately changed to 12 issues per year to reduce the large backlog quickly. Concurrently, after a six-month research period, we chose the Allentrack submission system and never looked back. Our objective from the outset was to have a transparent, effective, informative-for-authors, and timely review process, all of which were based on the principle of publishing the highest quality papers in the Transactions. Later, when I became the IMS President, I wrote a message in the I&M Magazine entitled 'It is all about quality.' 'Quality' governed how we conducted ALL of our affairs related to TIM, and that legacy continues today. The persistent notion that 'once you achieve Quality all other metrics will follow,' has certainly proven to be true."

I could not agree more with Reza and his focus on "Quality." In Fig. 4, we can see that TIM's performance was essentially random until Reza took the helm, and from that point on, we witness significant and continuous improvement. To highlight the quality of work, Reza also established the TIM Outstanding AEs[10] and the TIM Outstanding Reviewers[11] recognitions. This strategy of focusing on quality was continued by the next EiC, Alessandro Ferrero, who writes:

Fig. 3. Cam Ingelin's retirement ceremony at IEEE I^{2}MTC 2018 in Houston, TX, USA. Left to right: IMS President Max Crotner, TIM EiC Shervin Shirmohammadi, former TIM EiC Steve Dyer, TIM Administrator Cam Ingelin, and Senior Past TIM EiC Reza Zoughi.

"I tried to follow two main paths: quality and focus. Quality of the review process, that shall guarantee a fair and fast evaluation of the submitted papers, always considering that even a rejected paper has the potential to become a good paper and authors must be helped to improve their work. Focus of all published papers on the scope of the journal, so that the I&M community can find, in the journal, a useful forum to present novel ideas and compare them with those proposed by other authors, and the other communities may find good solutions to the I&M problems they have to deal with. It is not up to me to say whether I succeeded and whether TIM's quality had improved during my term as the EiC."

Well, Alessandro, according to Fig. 4 and all other JCR and Scopus quality metrics, you succeeded very well! In fact, for his strategy of "focus" on TIM's scope, Alessandro introduced the successful educational *topical guides*,[12] which explain I&M concepts to authors of other fields and help those authors properly write a paper from their field for TIM. As usual, Alessandro also has a delightful story to share:

"My first contact with TIM goes back to many years ago (too many!) when scientific research started to attract me. At that time, TIM was considered, in the Italian scenario of the I&M research, as a highly qualified journal in which only the top scientists dared to publish, and all others were supposed to only read and study it. You can easily imagine how the TIM EiC could be seen by the young, full of hope, wannabe scientist I was at that time: a sort of God, sitting

[10] http://tim.ieee-ims.org/content/outstanding-associate-editors
[11] http://tim.ieee-ims.org/outstanding-reviewers
[12] http://tim.ieee-ims.org/content/topical-guides

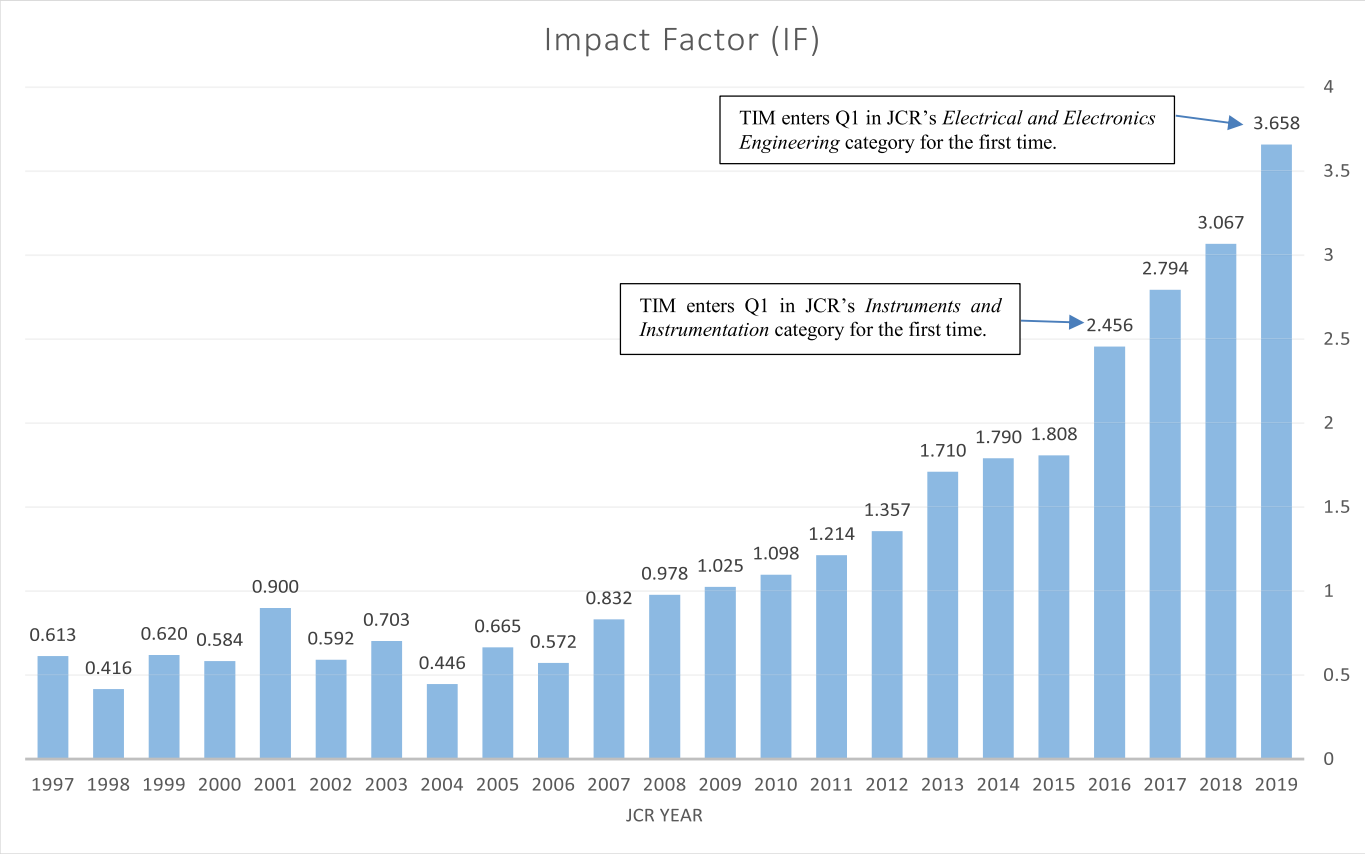

Fig. 4. TIM's Impact Factor over the years.

in the Olympus, exerting the power of life or death on my papers. The first TIM EiC I ever met was Ed Richter during an IMTC conference. I can't remember what we talked about, but I clearly remember that I thought I would never be capable of serving as an EiC. I continued to believe that many other AEs were better qualified than me for an EiC job. No wonder that, when Reza asked me years later if I were available to succeed him, I asked back if he were kidding? I have to say that, after five long years of EiC service, that feeling was fully justified. No matter how long you serve as an AE, you have no idea of the time, energy, dedication and also diplomacy needed to run the show and not to destroy the good job done by those before you."

Well said, Alessandro, and I am very happy that, according to the metrics, I have also been able to successfully continue the good work of the people before me. Speaking of the good work of people before us, it is now my pleasure to present TIM's Top 70 lists, as a commemoration of TIM authors, reviewers, and AEs, whom we salute and thank for their outstanding contributions over the years. In the next few pages, you can see the *Top 70 most-published authors*, *Top 70 most-published organizations*, and *Top 70 most-cited articles*, all extracted from the Web of Science data at the time of this writing, and in both "of all time" and "in the past seven years" categories, allowing us to compare historical trends with more recent trends. These lists are followed by two other lists of significant importance to me personally: the *Top 70 most-productive reviewers* and *Top 70 most-productive AEs*, both for the past seven years. I cannot emphasize enough the priceless contributions of reviewers and AEs to TIM's overall quality, and the tremendous number of hours that these volunteers give so generously from their time, mind, and energy, which reflects clearly in TIM's success. We owe them a special Thank You! I am proud to see that many people in the former list are now serving as TIM's AEs, due to our policy of recruiting AEs from our best reviewers.[13] I wish I could also present similar lists of reviews and AEs "of all time," but we do not have any performance data from reviewers or AEs before the Allentrack system.

Congratulations to all in these lists and to all other members of the TIM community! Looking forward to a fantastic future for TIM and its community.

Cheers!

SHERVIN SHIRMOHAMMADI, *Editor-in-Chief*

[13] http://tim.ieee-ims.org/content/how-become-editor

Top 70 most-published authors of all time

Rank	Author	Organization	Papers
1	Johan Schoukens	Vrije Universiteit Brussel, Belgium	105
2	Rik Pintelon	Vrije Universiteit Brussel, Belgium	87
3	Alessandro Ferrero	Polytechnic University of Milan, Italy	79
	Dario Petri	University of Trento, Italy	79
5	Reza Zoughi	Iowa State University, USA	75
6	Paolo Carbone	University of Perugia, Italy	73
7	Bruno Andò	University of Catania, Italy	58
8	Yves Rolain	Vrije Universiteit Brussel, Belgium	57
9	Leopoldo Angrisani	University of Naples Federico II, Italy	53
10	Salvatore Baglio	University of Catania, Italy	51
	Alessandra Flammini	University of Brescia, Italy	51
	Carlo Muscas	University of Cagliari, Italy	51
13	Emil Petriu	University of Ottawa, Canada	49
14	Eddy So	National Research Council, Canada	45
15	Manfred Klonz	Physikalisch-Technische Bundesanstalt (PTB), Germany	44
	Antonio Pietrosanto	University of Salerno, Italy	44
	Yong Yan	University of Kent, UK	44
18	Kenzo Watanabe	Shizuoka University, Japan	42
19	Carmine Landi	University of Campania Luigi Vanvitelli, Italy	41
	Daniele Marioli	University of Brescia, Italy	41
21	Lorenzo Peretto	University of Bologna, Italy	40
22	Giovanni Betta	University of Cassino and Southern Lazio, Italy	39
	Wendy Van Moer	M&WTechnics BVBA, Belgium	39
24	Samuel P Benz	National Institute of Standards and Technology, USA	38
25	Consolatina Liguori	University of Salerno, Italy	37
	Andrea Taroni	University of Brescia, Italy	37
27	Wojtek J. Bock	University of Quebec at Outaouais, Canada	36
	Antonio Moschitta	University of Perugia, Italy	36
	Simona Salicone	Polytechnic University of Milan, Italy	36
30	Pasquale Daponte	University of Sannio, Italy	35
	Gerd Vandersteen	Vrije Universiteit Brussel, Belgium	35
32	Kenichi Fujii	National Metrology Institute of Japan	34
	Umberto Pogliano	Istituto Nazionale di Ricerca Metrologica (INRiM), Italy	34
34	Mohammad Tayeb Ghasr	Iowa State University, USA	33
	Roman Z. Morawski	Warsaw University of Technology, Poland	33
36	Boby George	Indian Institute of Technology Madras, India	32
	Antonello Monti	RWTH Aachen University, Germany	32
	Ferdinanda Ponci	RWTH Aachen University, Germany	32
39	Luca Callegaro	Istituto Nazionale di Ricerca Metrologica (INRiM), Italy	31
	Peter Händel	KTH Royal Institute of Technology, Sweden	31
	Blaise Jeanneret	Federal Institute of Metrology (METAS), Switzerland	31
	Stanislaw S. Stuchly	University of Victoria, Canada	31
43	Filippo Attivissimo	Polytechnic University of Bari, Italy	30
	Andrzej Barwicz	University of Quebec at Trois-Rivieres, Canada	30
	Ralf Behr	Physikalisch-Technische Bundesanstalt (PTB), Germany	30
	Charles J. Burroughs	National Institute of Standards and Technology, USA	30
	David Macii	University of Trento, Italy	30
	Claudio Narduzzi	University of Padua, Italy	30
	Sergio Rapuano	University of Sannio, Italy	30
50	Paolo Ferrari	University of Brescia, Italy	29
	Gert Rietveld	VSL Dutch Metrology Institute, The Netherlands	29
52	Joseph R. Kinard	National Institute of Standards and Technology, USA	28
	Cesare Svelto	Polytechnic University of Milan, Italy	28

54	Pasquale Arpaia	University of Naples Federico II, Italy	27
	Piet M.T. Broersen	Delft University of Technology, The Netherlands	27
	Tadashi Endo	Electrotechnical Laboratory, Japan	27
	Domenico Grimaldi	University of Calabria, Italy	27
	István Kollár	Budapest University of Technology and Economics, Hungary	27
	Stuart O Nelson	United States Department of Agriculture, USA	27
	Marco Parvis	Polytechnic University of Turin, Italy	27
61	Matteo Bertocco	University of Padua, Italy	26
	Daniele Gallo	University of Campania Luigi Vanvitelli, Italy	26
	Emiliano Sisinni	University of Brescia, Italy	26
	T. Michael Souders	National Institute of Standards and Technology, USA	26
	Roberto Tinarelli	University of Bologna, Italy	26
	Lijun Xu	Beihang University, China	26
67	Antonio Cataliotti	University of Palermo, Italy	25
	Suni R. Das	University of Ottawa, Canada	25
	Paul D. Dresselhaus	National Institute of Standards and Technology, USA	25
	Abdulmotaleb El Saddik	University of Ottawa, Canada	25
	Luigi Ferrigno	University of Cassino and Southern Lazio, Italy	25
	George C. Giakos	Manhattan College, USA	25
	Gerard C. M. Meijer	Delft University of Technology, The Netherlands	25
	Paolo Attilio Pegoraro	University of Cagliari, Italy	25
	Shervin Shirmohammadi	University of Ottawa, Canada	25
	Bernardo Tellini	University of Pisa, Italy	25
	Bryan C Waltrip	National Institute of Standards and Technology, USA	25

Top 70 most-published authors in the past 7 years

Rank	Author	Institute	Papers
1	Salvatore Baglio	University of Catania, Italy	33
2	Bruno Andò	University of Catania, Italy	31
3	Paolo Carbone	University of Perugia, Italy	29
4	Reza Zoughi	Iowa State University, USA	26
5	Mohammad Tayeb Ghasr	Iowa State University, USA	24
6	Carlo Muscas	University of Cagliari, Italy	23
7	Antonio Moschitta	University of Perugia, Italy	22
	Johan Schoukens	Vrije Universiteit Brussel, Belgium	22
9	Alessandra Flammini	University of Brescia, Italy	21
	Boby George	Indian Institute of Technology Madras, India	21
	Paolo Attilio Pegoraro	University of Cagliari, Italy	21
12	Dario Petri	University of Trento, Italy	20
13	Shervin Shirmohammadi	University of Ottawa, Canada	18
	Sergio Toscani	Polytechnic University of Milan, Italy	18
	Yong Yan	University of Kent, UK	18
16	Alessandro Ferrero	Polytechnic University of Milan, Italy	17
	Roberto Ferrero	University of Liverpool, UK	17
	Qing He	National Institute of Metrology, China	17
	David Macii	University of Trento, Italy	17
	Zhonghua Zhang	National Institute of Metrology, China	17
21	Alessio De Angelis	University of Perugia, Italy	16
	Paolo Ferrari	University of Brescia, Italy	16
	Zhengkun Li	National Institute of Metrology, China	16
	Yunfeng Lu	National Institute of Metrology, China	16
	Mario Luiso	University of Campania Luigi Vanvitelli, Italy	16
	Vincenzo Marletta	University of Catania, Italy	16
	Emiliano Sisinni	University of Brescia, Italy	16
	Yong Zhao	Northeastern University, China	16
29	Antonello Monti	RWTH Aachen University, Germany	15

30	Daniele Gallo	University of Campania Luigi Vanvitelli, Italy	14
	Ferdinanda Ponci	RWTH Aachen University, Germany	14
	Stefano Rinaldi	University of Brescia, Italy	14
	Luca Callegaro	Istituto Nazionale di Ricerca Metrologica (INRiM), Italy	13
	Daniele Fontanelli	University of Trento, Italy	13
	Domenico Giordano	Istituto Nazionale di Ricerca Metrologica (INRiM), Italy	13
	Peter Händel	KTH Royal Institute of Technology, Sweden	13
33	Masahiro Horibe	National Institute of Advanced Industrial Science and Technology (AIST), Japan	13
	Nobu-Hisa Kaneko	National Institute of Advanced Industrial Science and Technology (AIST), Japan	13
	Rik Pintelon	Vrije Universiteit Brussel, Belgium	13
	Gert Rietveld	VSL Dutch Metrology Institute, The Netherlands	13
	Sara Sulis	University of Cagliari, Italy	13
	David Zhang	Chinese University of Hong Kong, China	13
43	Feng Dong	Tianjin University, China	12
	Kenichi Fujii	National Metrology Institute of Japan	12
	Carmine Landi	University of Campania Luigi Vanvitelli, Italy	12
	Takehiko Oe	National Metrology Institute of Japan	12
	Lorenzo Peretto	University of Bologna, Italy	12
	Gerd Vandersteen	Vrije Universiteit Brussel, Belgium	12
	Lijun Xu	Beihang University, China	12
	Ruqiang Yan	Xi'an Jiaotong University, China	12
51	Xuefeng Chen	Xi'an Jiaotong University, China	11
	Gabriella Crotti	Istituto Nazionale di Ricerca Metrologica (INRiM), Italy	11
	Ada Fort	University of Siena, Italy	11
	Naoki Kuramoto	National Institute of Advanced Industrial Science and Technology (AIST), Japan	11
	John Lataire	Vrije Universiteit Brussel, Belgium	11
	Zhigang Liu	Southwest Jiaotong University, China	11
	Valerio Vignoli	University of Siena, Italy	11
58	Tommaso Addabbo	University of Siena, Italy	10
	Yasutaka Amagai	National Metrology Institute of Japan	10
	Kurt Barbé	Vrije Universiteit Brussel, Belgium	10
	Zhang Cao	Beihang University, China	10
	Dietmar Drung	Physikalisch-Technische Bundesanstalt (PTB), Germany	10
	Sabrina Grassini	Polytechnic University of Turin, Italy	10
	Marian Kampik	Silesian University of Technology, Poland	10
	Marco Mugnaini	University of Siena, Italy	10
	Marco Pau	RWTH Aachen University, Germany	10
	Bernardo Tellini	University of Pisa, Italy	10
	De Xu	Chinese Academy of Sciences, China	10
69	Kristen Donnell	Missouri University of Science and Technology, USA	9
	Marco Faifer	Polytechnic University of Milan, Italy	9
	Jiancheng Fang	Beihang University, China	9
	Guglielmo Frigo	Federal Institute of Metrology (METAS), Switzerland	9
	Hiroyuki Fujiki	National Metrology Institute of Japan	9
	Qingbo He	Shanghai Jiao Tong University, China	9
	Changzhi Li	Texas Tech University, USA	9
	Consolatina Liguori	University of Salerno, Italy	9
	Zuliang Lu	National Institute of Metrology, China	9
	Claudio Narduzzi	University of Padua, Italy	9
	Antonio Pistorio	University of Catania, Italy	9
	Emilio Sardini	University of Brescia, Italy	9
	Mauro Serpelloni	University of Brescia, Italy	9
	Eddy So	National Research Council, Canada	9
	Chao Tan	Tianjin University, China	9
	Jiubin Tan	Harbin Institute of Technology, China	9
	Zhaosheng Teng	Hunan University, China	9
	Roberto Tinarelli	University of Bologna, Italy	9
	Ke-Jun Xu	Hefei University of Technology, China	9
	Wuqiang Yang	University of Manchester, UK	9

Top 70 most-published organizations of all time

Rank	Organization	Papers
1	National Institute of Standards Technology (NIST), USA	551
2	National Institute of Advanced Industrial Science and Technology (AIST), Japan 1) Includes 156 papers from its research department National Metrology Institute of Japan (NMIJ)	447
3	Physikalisch-Technische Bundesanstalt (PTB), Germany	389
4	Polytechnic University of Milan, Italy	226
5	University of Ottawa, Canada	214
6	National Research Council, Canada	213
7	Vrije Universiteit Brussel, Belgium	208
8	Instituto Nazionale Di Ricerca Metrologica (INRIM), Italy	195
9	National Physical Laboratory (NPL), UK	160
10	Centre National De La Recherche Scientifique (CNRS), France	152
11	Consiglio Nazionale Delle Ricerche (CNR), Italy	135
12	Delft University of Technology, The Netherlands	132
13	Polytechnic University of Turin, Italy	122
14	Missouri University of Science and Technology, USA	110
15	University of Brescia, Italy	108
16	Warsaw University of Technology, Poland	107
17	National Institute of Metrology (NIM), China	106
	University of Naples Federico II, Italy	106
19	University of Paris-Saclay, France	105
20	Beihang University, China	101
21	University of Catania, Italy	98
22	Korea Research Institute of Standards Science (KRISS), Republic of Korea	95
23	Chinese Academy of Sciences, China	93
	University of Perugia, Italy	93
25	Budapest University of Technology Economics, Hungary	89
26	Tsinghua University, China	82
	University of Trento, Italy	82
28	University of Salerno, Italy	77
29	Commonwealth Scientific Industrial Research Organisation (CSIRO), Australia	76
	United States Department of Defense, USA	76
	University of Quebec, Canada	76
32	International Bureau of Weights and Measures (BIPM)	75
	United States Department of Energy, USA	75
34	Carleton University, Canada	74
	Harbin Institute of Technology, China	74
	University of Padua, Italy	74
37	Universite Libre De Bruxelles, Belgium	71
38	National Aeronautics Space Administration (NASA), USA	69
	Polytechnic University of Catalonia, Spain	69
	University of Bologna, Italy	69
41	Shizuoka University, Japan	66
	University of Calgary, Canada	66
	University of Pisa, Italy	66
	University of Sannio, Italy	66
45	University of Cagliari, Italy	65
46	University of Cassino and Southern Lazio, Italy	64
47	University of Lisbon, Portugal	60
48	Tianjin University, China	58
49	Aalto University, Finland	54
	Indian Institute of Technology, Madras	54
	Federal Institute of Metrology (METAS), Switzerland	54
52	Polytechnic University of Bari, Italy	51

53	CentraleSupélec, France	50
	United States Navy, USA	50
56	Zhejiang University, China	50
	University of Manchester, UK	49
57	University of Belgrade, Serbia	47
	University of Florence, Italy	47
	Xi'an Jiaotong University, China	47
60	Istituto Nazionale Per La Fisica Della Materia (INFM), Italy	46
	University of Montreal, Canada	46
62	National Institute of Information Communications Technology (NICT), Japan	45
	University of Campania Luigi Vanvitelli, Italy	45
	University of Kent, UK	45
65	Nanyang Technological University, Singapore	44
66	Jadavpur University, India	43
	Polytechnique Montréal, Canada	43
	University of Genoa, Italy	43
69	Instituto de Telecomunicações, Portugal	42
	Shanghai Jiao Tong University, China	42

Top 70 most-published organizations in the past seven years

Rank	Organization	Papers
1	National Institute of Advanced Industrial Science and Technology (AIST), Japan 1) Includes 66 papers from its research department National Metrology Institute of Japan (NMIJ)	141
2	Chinese Academy of Sciences, China 1) Includes 14 papers from its research laboratory Institute of Automation	78
3	Beihang University, China	73
4	Polytechnic University of Milan, Italy	62
5	National Institute of Metrology (NIM), China	58
6	Missouri University of Science and Technology, USA	54
	Physikalisch-Technische Bundesanstalt (PTB), Germany	54
8	Harbin Institute of Technology, China	53
9	Vrije Universiteit Brussel, Belgium	49
10	Instituto Nazionale Di Ricerca Metrologica (INRIM), Italy	46
11	Tsinghua University, China	45
12	University of Ottawa, Canada	43
13	Northeastern University China, China	41
14	National Institute of Standards Technology (NIST), USA	40
	University of Catania, Italy	40
16	Tianjin University, China	39
	Xi'an Jiaotong University, China	39
18	University of Brescia, Italy	38
19	Polytechnic University of Turin, Italy	37
20	University of Perugia, Italy	36
	University of Trento, Italy	36
22	University of Cagliari, Italy	30
	Zhejiang University, China	30
24	Hunan University, China	28
	Shanghai Jiao Tong University, China	28
26	Centre National De La Recherche Scientifique (CNRS), France	25
	Hefei University of Technology, China	25
	University of Campania Luigi Vanvitelli, Italy	25
29	Indian Institute of Technology Madras, India	24
	National University of Defense Technology, China	24

31	Indian Institute of Technology Kharagpur, India	23
	Polytechnic University of Catalonia, Spain	23
33	Consiglio Nazionale Delle Ricerche (CNR), Italy	22
	Southeast University, China	22
	University of Manchester, UK	22
36	Huazhong University of Science Technology, China	21
	National Research Council, Canada	21
	University of Pisa, Italy	21
39	Carleton University, Canada	20
	Southwest Jiaotong University, China	20
	VSL Dutch Metrology Institute, The Netherlands	20
42	Czech Metrology Institute (CMI), Czech Republic	19
	RWTH Aachen University, Germany	19
	University of Bologna, Italy	19
	University of Kent, UK	19
46	North China Electric Power University, China	18
	KTH Royal Institute of Technology, Sweden	18
	University of Electronic Science and Technology of China, China	18
49	National Physical Laboratory (NPL), UK	17
	National University of Singapore, Singapore	17
	University of Padua, Italy	17
	University of Science Technology of China, China	17
53	Korea Research Institute of Standards Science (KRISS), Republic of Korea	16
	State Key Laboratory of Synthetical Automation for Process Industries, China	16
55	Budapest University of Technology and Economics, Hungary	15
	Jilin University, China	15
	University of Paris-Saclay, France	15
	The University of the Chinese Academy of Sciences, China	15
	University of Edinburgh, UK	15
	University of Salerno, Italy	15
61	Federal Institute of Technology Lausanne (EPFL), Switzerland	14
	Hong Kong Polytechnic University, China	14
	Nanyang Technological University, Singapore	14
	Sapienza University of Rome, Italy	14
	University of Calgary, Canada	14
	University of Sannio, Italy	14
	Wuhan University, China	14
68	Silesian University of Technology, Poland	13
	University of Liverpool, UK	13
	University of Salento, Italy	13
	University of Siena, Italy	13

Top 70 most-cited articles of all time

Rank	Article	Authors	Citations	Year
1	Measurement of Intrinsic Properties of Materials by Time-Domain Techniques	Nicolson, AM; Ross, GF	1560	1970
2	Characterization of Frequency Stability	Barnes, JA; Chi, AR; Cutler, LS; Healey, DJ; Leeson, DB; Mcgunigal, TE; Mullen, JA; Smith, WL; Sydnor, RL; Vessot, RFC; Winkler, GMR	538	1971
3	ECG Analysis: A New Approach in Human Identification	Biel, L; Pettersson, O; Philipson, L; Wide, P	477	2001
4	Generalized Instantaneous Reactive Power Theory for Three-Phase Power Systems	Peng, FZ; Lai, JS	450	1996
5	Free-Space Measurement of Complex Permittivity and Complex Permeability of Magnetic-Materials at Microwave-Frequencies	Ghodgaonkar, DK; Varadan, VV; Varadan, VK	449	1990
6	Prognostics Methods for Battery Health Monitoring Using A Bayesian Framework	Saha, Bhaskar; Goebel, Kai; Poll, Scott; Christophersen, Jon	387	2009
	Design of an RFID-Based Battery-Free, Programmable Sensing Platform	Sample, Alanson P.; Yeager, Daniel J.; Powledge, Pauline S.; Mamishev, Alexander V.; Smith, Joshua R.	387	2008

8	Interpolation Algorithms for Discrete Fourier-Transforms of Weighted Signals	Grandke, T	371	1983
9	Analysis and Modeling of Inertial Sensors Using Allan Variance	EI-Sheimy, Naser; Hou, Haiying; Niu, Xiaoji	367	2008
10	Multifocus Image Fusion and Restoration with Sparse Representation	Yang, Bin; Li, Shutao	352	2010
11	Coaxial Line Reflection Methods for Measuring Dielectric-Properties of Biological Substances at Radio and Microwave-Frequencies—A Review	Stuchly, MA; Stuchly, SS	342	1980
12	Emi Shielding Measurements of Conductive Polymer Blends	Colaneri, NF; Shacklette, LW	335	1992
13	High-Accuracy Analog Measurements Via Interpolated FFT	Jain, VK; Collins, WL; Davis, DC	329	1979
14	EMD-Based Signal Filtering	Boudraa, Abdel-Ouahab; Cexus, Jean-Christophe	314	2007
15	A Free-Space Method for Measurement of Dielectric-Constants and Loss Tangents at Microwave-Frequencies	Ghodgaonkar, DK; Varadan, VV; Varadan, VK	299	1989
16	Windows and Interpolation Algorithms to Improve Electrical Measurement Accuracy	Andria, G; Savino, M; Trotta, A	290	1989
17	Mono-Ion Oscillator as Potential Ultimate Laser Frequency Standard	Dehmelt, HG	280	1982
18	Digital Image Watermarking Using Discrete Wavelet Transform and Singular Value Decomposition	Lai, Chih-Chin; Tsai, Cheng-Chih	278	2010
19	PCA-Based Feature Selection Scheme for Machine Defect Classification	Malhi, A; Gao, RX	274	2004
20	Accurate Pedestrian Indoor Navigation by Tightly Coupling Foot-Mounted IMU and RFID Measurements	Jimenez Ruiz, Antonio Ramon; Seco Granja, Fernando; Prieto Honorato, Jose Carlos; Guevara Rosas, Jorge I.	272	2012
21	Statistical Theory of Quantization	Widrow, B; Kollar, I; Liu, MC	265	1996
22	Remote Sensing and Control of an Irrigation System Using a Distributed Wireless Sensor Network	Kim, Yunseop (James); Evans, Robert G.; Iversen, William M.	264	2008
23	A Novel Kalman Filter for Frequency Estimation of Distorted Signals in Power Systems	Routray, A; Pradhan, AK; Rao, KP	236	2002
24	Josephson D/A Converter with Fundamental Accuracy	Hamilton, CA; Burroughs, CJ; Kautz, RL	223	1995
25	Real-Time Hand Gesture Detection and Recognition Using Bag-Of-Features and Support Vector Machine Techniques	Dardas, Nasser H.; Georganas, Nicolas D.	205	2011
	Analog Fault Diagnosis of Actual Circuits Using Neural Networks	Aminian, F; Aminian, M; Collins, HW	205	2002
27	Hilbert-Huang Transform-Based Vibration Signal Analysis for Machine Health Monitoring	Yan, Ruqiang; Gao, Robert X.	203	2006
28	The Interpolated Fast Fourier-Transform - A Comparative-Study	Schoukens, J; Pintelon, R; Vanhamme, H	202	1992
29	An Improved Technique for Permittivity Measurements Using a Coaxial Probe	Blackham, DV; Pollard, RD	197	1997
30	Modeling of High Power Automotive Batteries by the Use of an Automated Test System	Schweighofer, B; Raab, KM; Brasseur, G	195	2003
31	Wavelet Distance Measure for Person Identification Using Electrocardiograms	Chan, Adrian D. C.; Hamdy, Mohyeldin M.; Badre, Armin; Badee, Vesal	194	2008
	Weighted Multipoint Interpolated DFT to Improve Amplitude Estimation of Multifrequency Signal	Agrez, D	194	2002
33	Digital Spectra of Nonuniformly Sampled Signals - Fundamentals and High-Speed Waveform Digitizers	Jenq, YC	192	1988
34	An Online System of Multispectral Palmprint Verification	Zhang, David; Guo, Zhenhua; Lu, Guangming; Zhang, Lei; Zuo, Wangmeng	191	2010
	A Simplified Quaternion-Based Algorithm for Orientation Estimation from Earth Gravity and Magnetic Field Measurements	Yuri, Xiaoping; Bachmann, Eric R.; Mcghee, Robert B.	191	2008
36	Bearing Health Monitoring Based on Hilbert-Huang Transform, Support Vector Machine, and Regression	Soualhi, Abdenour; Medjaher, Kamal; Zerhouni, Noureddine	186	2015
37	Digital Time-Of-Flight Measurement for Ultrasonic Sensors	Marioli, D; Narduzzi, C; Offelli, C; Petri, D; Sardini, E; Taroni, A	185	1992
38	Automated Irrigation System Using a Wireless Sensor Network and GPRS Module	Gutierrez, Joaquin; Francisco Villa-Medina, Juan; Nieto-Garibay, Alejandra; Angel Porta-Gandara, Miguel	183	2014
39	Design of a Wireless Assisted Pedestrian Dead Reckoning System - The NavMote Experience	Fang, L; Antsaklis, PJ; Montestruque, LA; Mcmickell, MB; Lemmon, M; Sun, YS; Fang, H; Koutroulis, I; Haenggi, M; Xie, M; Xie, XJ	181	2005

40	Circle Fitting Procedure and Its Error Analysis	Kasa, I	178	1976
41	Self-Mixing Laser Diode Velocimetry: Application to Vibration and Velocity Measurement	Scalise, L; Yu, YG; Giuliani, G; Plantier, G; Bosch, T	177	2004
	Orthogonal Decomposition of The Currents in A 3-Phase Nonlinear Asymmetrical Circuit with A Nonsinusoidal Voltage Source	Czarnecki, LS	177	1988
43	Energy-Efficient Distributed Adaptive Multisensor Scheduling for Target Tracking in Wireless Sensor Networks	Lin, Jianyong; Xiao, Wendong; Lewis, Frank L.; Xie, Lihua	169	2009
44	Dynamic Phasor Estimates for Power System Oscillations	Serna, Jose Antonio De La O.	168	2007
45	Reflection of An Open-Ended Coaxial Line and Application to Non-Destructive Measurement of Materials	Mosig, JR; Besson, JCE; Gexfabry, M; Gardiol, FE	164	1981
46	Microwave System for Head Imaging	Mohammed, Beada'a J.; Abbosh, Amin M.; Mustafa, Samah; Ireland, David	163	2014
47	Real-Time Determination of Power System Frequency	Lobos, T; Rezmer, J	162	1997
48	Material Characterization Using Complementary Split-Ring Resonators	Boybay, Muhammed Said; Ramahi, Omar M.	159	2012
49	Bearing Damage Detection Via Wavelet Packet Decomposition of The Stator Current	Eren, L; Devaney, MJ	154	2004
	Identification of Time-Variant Directional Mobile Radio Channels	Thoma, RS; Hampicke, D; Richter, A; Sommerkorn, G; Schneider, A; Trautwein, U; Wirnitzer, W	154	2000
51	Analysis of An Open-Ended Coaxial Probe with Lift-Off for Nondestructive Testing	Bakerjarvis, J; Janezic, MD; Domich, Pd; Geyer, RG	153	1994
52	A Review of Stochastic Resonance: Circuits and Measurement	Harmer, GP; Davis, BR; Abbott, D	152	2002
	Histogram Measurement of ADC Nonlinearities Using Sine Waves	Blair, J	152	1994
54	Multisensor Feature Fusion for Bearing Fault Diagnosis Using Sparse Autoencoder and Deep Belief Network	Chen, Zhuyun; Li, Weihua	148	2017
55	A New Neural-Network-Based Fault Diagnosis Approach for Analog Circuits by Using Kurtosis and Entropy As A Preprocessor	Yuan, Lifen; He, Yigang; Huang, Jiaoying; Sun, Yichuang	147	2010
56	A Novel Approach for Motion Artifact Reduction in PPG Signals Based on AS-LMS Adaptive Filter	Ram, M. Raghu; Madhav, K. Venu; Krishna, E. Hari; Komalla, Nagarjuna Reddy; Reddy, K. Ashoka	146	2012
	A 303-Mhz Frequency Standard Based on Trapped Be+ Ions	Bollinger, JJ; Heinzen, DJ; Itano, WM; Gilbert, SL; Wineland, DJ	146	1991
58	Automatic Stage Scoring of Single-Channel Sleep EEG by Using Multiscale Entropy and Autoregressive Models	Liang, Sheng-Fu; Kuo, Chin-En; Hu, Yu-Han; Pan, Yu-Hsiang; Wang, Yung-Hung	145	2012
59	Coarse Alignment of A Ship's Strapdown Inertial Attitude Reference System Using Velocity Loci	Silson, Peter M. G.	144	2011
	A Cesium Fountain Frequency Standard - Preliminary-Results	Clairon, A; Laurent, P; Santarelli, G; Ghezali, S; Lea, Sn; Bahoura, M	144	1995
	A New Interpretation of The Akagi-Nabae Power Components for Nonsinusoidal 3-Phase Situations	Willems, JL	144	1992
62	The Impact of Combined Channel Mismatch Effects in Time-Interleaved ADCs	Vogel, C	142	2005
63	Enhanced Interpolated-DFT for Synchrophasor Estimation in FPGAs: Theory, Implementation, and Validation of A PMU Prototype	Romano, Paolo; Paolone, Mario	140	2014
	Machinable Rogowski Coil, Design, and Calibration	Ramboz, JD	140	1996
65	Domain Adaptation Extreme Learning Machines for Drift Compensation in E-Nose Systems	Zhang, Lei; Zhang, David	138	2015
66	A New Approach to The Definition of Power Components in 3-Phase Systems Under Nonsinusoidal Conditions	Ferrero, A; Supertifurga, G	137	1991
	A Multiple Modulator Fractional Divider	Miller, B; Conley, RJ	137	1991
	What Is Wrong with The Budeanu Concept of Reactive and Distortion Power and Why It Should Be Abandoned	Czarnecki, LS	137	1987
69	State-Of-The-Art in Integrated Optical Microspectrometers	Wolffenbuttel, RF	134	2004
70	The Influence of Windowing on The Accuracy of Multifrequency Signal Parameter-Estimation	Offelli, C; Petri, D	133	1992
	Interpolation Techniques for Real-Time Multifrequency Wave-Form Analysis	Offelli, C; Petri, D	133	1990

Top 70 most-cited articles published in the past seven years

Rank	Article	Authors	Citations	Year
1	Bearing Health Monitoring Based on Hilbert-Huang Transform, Support Vector Machine, and Regression	Soualhi, Abdenour; Medjaher, Kamal; Zerhouni, Noureddine	186	2015
2	Automated Irrigation System Using a Wireless Sensor Network and GPRS Module	Gutierrez, Joaquin; Francisco Villa-Medina, Juan; Nieto-Garibay, Alejandra; Angel Porta-Gandara, Miguel	183	2014
3	Microwave System for Head Imaging	Mohammed, Beada'a J.; Abbosh, Amin M.; Mustafa, Samah; Ireland, David	163	2014
4	Multisensor Feature Fusion for Bearing Fault Diagnosis Using Sparse Autoencoder and Deep Belief Network	Chen, Zhuyun; Li, Weihua	148	2017
5	Enhanced Interpolated-DFT for Synchrophasor Estimation in FPGAs: Theory, Implementation, and Validation of a PMU Prototype	Romano, Paolo; Paolone, Mario	140	2014
6	Domain Adaptation Extreme Learning Machines for Drift Compensation in E-Nose Systems	Zhang, Lei; Zhang, David	138	2015
7	Efficient Branch-Current-Based Distribution System State Estimation Including Synchronized Measurements	Pau, Marco; Pegoraro, Paolo Attilio; Sulis, Sara	123	2013
8	Application of Cross Wavelet Transform for ECG Pattern Analysis and Classification	Banerjee, Swati; Mitra, Madhuchhanda	116	2014
9	Automatic Fastener Classification and Defect Detection in Vision-Based Railway Inspection Systems	Feng, Hao; Jiang, Zhiguo; Xie, Fengying; Yang, Ping; Shi, Jun; Chen, Long	112	2014
10	Object Recognition Using Tactile Measurements: Kernel Sparse Coding Methods	Liu, Huaping; Guo, Di; Sun, Fuchun	110	2016
	Particle-Filtering-Based Prognosis Framework for Energy Storage Devices with a Statistical Characterization of State-of-Health Regeneration Phenomena	Olivares, Benjamin E.; Cerda Munoz, Matias A.; Orchard, Marcos E.; Silva, Jorge F.	110	2013
12	Accuracy Analysis of the Multicycle Synchrophasor Estimator Provided by the Interpolated DFT Algorithm	Belega, Daniel; Petri, Dario	105	2013
13	EMD-Based Filtering Using Similarity Measure Between Probability Density Functions of IMFs	Komaty, Ali; Boudraa, Abdel-Ouahab; Augier, Benoit; Dare-Emzivat, Delphine	94	2014
14	Detection and Classification of Power Quality Disturbances Using Sparse Signal Decomposition on Hybrid Dictionaries	Manikandan, M. Sabarimalai; Samantaray, S. R.; Kamwa, Innocent	93	2015
15	Automatic Defect Detection on Hot-Rolled Flat Steel Products	Ghorai, Santanu; Mukherjee, Anirban; Gangadaran, M.; Dutta, Pranab K.	90	2013
16	Initial Alignment by Attitude Estimation for Strapdown Inertial Navigation Systems	Chang, Lubin; Li, Jingshu; Chen, Shengyong	89	2015
	A Fast and Accurate PMU Algorithm for P plus M Class Measurement of Synchrophasor and Frequency	Castello, Paolo; Liu, Junqi; Muscas, Carlo; Pegoraro, Paolo Attilio; Ponci, Ferdinanda; Monti, Antonello	89	2014
	Fault Detection and Classification in Medium Voltage DC Shipboard Power Systems with Wavelets and Artificial Neural Networks	Li, Weilin; Monti, Antonello; Ponci, Ferdinanda	89	2014
19	Real-Time RFID Indoor Positioning System Based on Kalman-Filter Drift Removal and Heron-Bilateration Location Estimation	Huang, Chung-Hao; Lee, Lun-Hui; Ho, Chian C.; Wu, Lang-Long; Lai, Zu-Hao	88	2015
20	Automatic Defect Identification of Eddy Current Pulsed Thermography Using Single Channel Blind Source Separation	Gao, Bin; Bai, Libing; Woo, Wai Lok; Tian, Gui Yun; Cheng, Yuhua	87	2014
21	Energy-Fluctuated Multiscale Feature Learning with Deep ConvNet for Intelligent Spindle Bearing Fault Diagnosis	Ding, Xiaoxi; He, Qingbo	86	2017
22	Heterogeneous Data Fusion Algorithm for Pedestrian Navigation via Foot-Mounted Inertial Measurement Unit and Complementary Filter	Fourati, Hassen	83	2015
23	Vibration-Based Intelligent Fault Diagnosis for Roller Bearings in Low-Speed Rotating Machinery	Song, Liuyang; Wang, Huaqing; Chen, Peng	81	2018
	A Real-Time Power Quality Disturbances Classification Using Hybrid Method Based on S-Transform and Dynamics	He, Shunfan; Li, Kaicheng; Zhang, Ming	81	2013
25	Synchrophasor Estimators Accuracy: A Comparative Analysis	Barchi, Grazia; Macii, David; Petri, Dario	75	2013
26	Comparing Ubisense, BeSpoon, and DecaWave UWB Location Systems: Indoor Performance Analysis	Jimenez Ruiz, Antonio Ramon; Seco Granja, Fernando	74	2017
	Optimal Meter Placement for Robust Measurement Systems in Active Distribution Grids	Liu, Junqi; Ponci, Ferdinanda; Monti, Antonello; Muscas, Carlo; Pegoraro, Paolo Attilio; Sulis, Sara	74	2014

28	Development of an Improved Time-Frequency Analysis-Based Nonintrusive Load Monitor for Load Demand Identification	Lin, Yu-Hsiu; Tsai, Men-Shen	73	2014
29	Robotic Room-Level Localization Using Multiple Sets of Sonar Measurements	Liu, Huaping; Sun, Fuchun; Fang, Bin; Zhang, Xinyu	72	2017
	Impact of Skin-Electrode Interface on Electrocardiogram Measurements Using Conductive Textile Electrodes	Taji, Bahareh; Shirmohammadi, Shervin; Groza, Voicu; Batkin, Izmail	72	2014
31	Remaining Useful Life Prediction of Lithium-Ion Batteries Based on Spherical Cubature Particle Filter	Wang, Dong; Yang, Fangfang; Tsui, Kwok-Leung; Zhou, Qiang; Bae, Suk Joo	71	2016
	PALDi: Online Load Disaggregation via Particle Filtering	Egarter, Dominik; Bhuvana, Venkata Pathuri; Elmenreich, Wilfried	71	2015
	Prognostics of Lithium-Ion Batteries Based on the Verhulst Model, Particle Swarm Optimization and Particle Filter	Xian, Weiming; Long, Bing; Li, Min; Wang, Houjun	71	2014
	Sensing Devices and Sensor Signal Processing for Remote Monitoring of Vital Signs in CHF Patients	Fanucci, Luca; Saponara, Sergio; Bacchillone, Tony; Donati, Massimiliano; Barba, Pierluigi; Sanchez-Tato, Isabel; Carmona, Cristina	71	2013
35	Static and Dynamic Hand Gesture Recognition in Depth Data Using Dynamic Time Warping	Plouffe, Guillaume; Cretu, Ana-Maria	70	2016
36	A Review for Conductive Polymer Piezoresistive Composites and a Development of a Compliant Pressure Transducer	Wang, Luheng; Li, Yanling	68	2013
37	Flexible Indoor Localization and Tracking Based on a Wearable Platform and Sensor Data Fusion	Colombo, Alessio; Fontanelli, Daniele; Macii, David; Palopoli, Luigi	67	2014
38	Stacked Multilevel-Denoising Autoencoders: A New Representation Learning Approach for Wind Turbine Gearbox Fault Diagnosis	Jiang, Guoqian; He, Haibo; Xie, Ping; Tang, Yufei	66	2017
	Energy-Aware Sensor Node Design With Its Application in Wireless Sensor Networks	Yan, Ruqiang; Sun, Hanghang; Qian, Yuning	66	2013
40	Noncontact Distance and Amplitude-Independent Vibration Measurement Based on an Extended DACM Algorithm	Wang, Jingyu; Wang, Xiang; Chen, Lei; Huangfu, Jiangtao; Li, Changzhi; Ran, Lixin	65	2014
	Measuring Calorie and Nutrition from Food Image	Pouladzadeh, Parisa; Shirmohammadi, Shervin; Al-Maghrabi, Rana	65	2014
	Fuzzy-Model-Based Fault Detection for a Class of Nonlinear Systems with Networked Measurements	Zhang, Dan; Wang, Qing-Guo; Yu, Li; Song, Haiyu	65	2013
43	Intelligent Bearing Fault Diagnosis Method Combining Compressed Data Acquisition and Deep Learning	Sun, Jiedi; Yan, Changhong; Wen, Jiangtao	64	2018
	Sentinella: Smart Monitoring of Photovoltaic Systems at Panel Level	Ando, Bruno; Baglio, Salvatore; Pistorio, Antonio; Tina, Giuseppe Marco; Ventura, Cristina	64	2015
	An Integrated Probabilistic Approach to Lithium-Ion Battery Remaining Useful Life Estimation	Liu, Datong; Xie, Wei; Liao, Haitao; Peng, Yu	64	2015
46	Power System Dynamic State Estimation with Synchronized Phasor Measurements	Aminifar, Farrokh; Shahidehpour, Mohammad; Fotuhi-Firuzabad, Mahmud; Kamalinia, Saeed	63	2014
	A Comprehensive Study into Intrabody Communication Measurements	Amparo Callejon, Maria; Naranjo-Hernandez, David; Reina-Tosina, Javier; Roa, Laura M.	63	2013
48	Feature Knowledge Based Fault Detection of Induction Motors Through the Analysis of Stator Current Data	Yang, Ting; Pen, Haibo; Wang, Zhaoxia; Chang, Che Sau	62	2016
	A Frequency-Domain Algorithm for Dynamic Synchrophasor and Frequency Estimation	Petri, Dario; Fontanelli, Daniele; Macii, David	62	2014
	Spectral Deconvolution and Feature Extraction With Robust Adaptive Tikhonov Regularization	Liu, Hai; Yan, Luxin; Chang, Yi; Fang, Houzhang; Zhang, Tianxu	62	2013
51	Localization in 3-D Using Beacons of Low Frequency Magnetic Field	Sheinker, Arie; Ginzburg, Boris; Salomonski, Nizan; Frumkis, Lev; Kaplan, Ben-Zion	61	2013
	Probabilistic Sensing Model for Sensor Placement Optimization Based on Line-of-Sight Coverage	Akbarzadeh, Vahab; Gagne, Christian; Parizeau, Marc; Argany, Meysam; Mostafavi, Mir Abolfazl	61	2013
53	Random Triggering-Based Sub-Nyquist Sampling System for Sparse Multiband Signal	Zhao, Yijiu; Hu, Yu Hen; Liu, Jingjing	60	2017
	Matching Synchrosqueezing Wavelet Transform and Application to Aeroengine Vibration Monitoring	Wang, Shibin; Chen, Xuefeng; Tong, Chaowei; Zhao, Zhibin	60	2017
55	Hyperspectral Image Classification via Multiple-Feature-Based Adaptive Sparse Representation	Fang, Leyuan; Wang, Cheng; Li, Shutao; Benediktsson, Jon Atli	59	2017
56	A Four-Sector Conductance Method for Measuring and Characterizing Low-Velocity Oil-Water Two-Phase Flows	Gao, Zhongke; Yang, Yuxuan; Zhai, Lusheng; Jin, Ningde; Chen, Guanrong	58	2016
	Image Reconstruction for Electrical Capacitance Tomography Based on Sparse Representation	Ye, Jiamin; Wang, Haigang; Yang, Wuqiang	58	2015
	Adaptive Multiscale Noise Tuning Stochastic Resonance for Health Diagnosis of Rolling Element Bearings	Wang, Jun; He, Qingbo; Kong, Fanrang	58	2015

61	Synchrophasor Estimation Using Prony's Method	Serna, Jose Antonio de la O.	58	2013
	Semisupervised Distance-Preserving Self-Organizing Map for Machine-Defect Detection and Classification	Li, Weihua; Zhang, Shaohui; He, Guolin	58	2013
	ECG Authentication for Mobile Devices	Arteaga-Falconi, Juan Sebastian; Al Osman, Hussein; El Saddik, Abdulmotaleb	57	2016
	Novel Methods for Noncontact Heart Rate Measurement: A Feasibility Study	Kranjec, Jure; Begus, Samo; Drnovsek, Janko; Gersak, Gregor	57	2014
	An Improved Model-Based Maximum Power Point Tracker for Photovoltaic Panels	Cristaldi, Loredana; Faifer, Marco; Rossi, Marco; Toscani, Sergio	57	2014
	Secondary Peak Detection of PPG Signal for Continuous Cuffless Arterial Blood Pressure Measurement	He, Xiaochuan; Goubran, Rafik A.; Liu, Xiaoping P.	57	2014
	Sequential Multiscale Noise Tuning Stochastic Resonance for Train Bearing Fault Diagnosis in an Embedded System	Lu, Siliang; He, Qingbo; Hu, Fei; Kong, Fanrang	57	2014
66	Detection and Classification of Power Quality Disturbances Using Double Resolution S-Transform and DAG-SVMs	Li, Jianmin; Teng, Zhaosheng; Tang, Qiu; Song, Junhao	56	2016
	A New Method Based on Stochastic Process Models for Machine Remaining Useful Life Prediction	Lei, Yaguo; Li, Naipeng; Lin, Jing	56	2016
	A Novel Texture Sensor for Fabric Texture Measurement and Classification	Song, Aiguo; Han, Yezhen; Hu, Haihua; Li, Jianqing	56	2014
	The OpenPMU Platform for Open-Source Phasor Measurements	Laverty, David M.; Best, Robert J.; Brogan, Paul; Al Khatib, Iyad; Vanfretti, Luigi; Morrow, D. John	56	2013
70	A Linear Kalman Filter for MARG Orientation Estimation Using the Algebraic Quaternion Algorithm	Valenti, Roberto G.; Dryanovski, Ivan; Xiao, Jizhong	54	2016
	Performance Study of Multilayer Perceptrons in a Low-Cost Electronic Nose	Zhang, Lei; Tian, Fengchun	54	2014

Top 70 most-productive reviewers in the past seven years

Rank	Name	Organization	Reviews
1	Daniel Belega	Politehnica University Timisoara, Romania	180
2	Daniele Fontanelli	University of Trento, Italy	134
3	David Macii	University of Trento, Italy	110
4	Donghoon Kang	Korea Institute of Science and Technology, Republic of Korea	103
5	Dušan Agrež	University of Ljubljana, Slovenia	98
6	Francesco Lamonaca	University of Sannio, Italy	92
7	Paolo Attilio Pegoraro	University of Cagliari, Italy	89
8	Mario Luiso	University of Campania Luigi Vanvitelli, Italy	79
	Roberto Tinarelli	University of Bologna, Italy	79
10	Guglielmo Frigo	Federal Institute of Metrology (METAS), Switzerland	78
11	Valentina Cosentino	University of Palermo, Italy	74
12	Alessio De Angelis	University of Perugia, Italy	71
13	Andrea Cataldo	University of Salento, Italy	67
14	Jerome Blair	Keystone International Inc., USA	65
	Antonio Moschitta	University of Perugia, Italy	65
16	Sergio Rapuano	University of Sannio, Italy	64
17	Octavian Postolache	Instituto de Telecomunicações, Portugal	62
	Sara Sulis	University of Cagliari, Italy	62
	Wuliang Yin	University of Manchester, UK	62
20	Boby George	Indian Institute of Technology Madras, India	60
21	Guiyun Tian	Newcastle University, UK	59
22	Leopoldo Angrisani	University of Naples Federico II, Italy	58
23	He Wen	Hunan University, China	57
24	Dario Di Cara	Consiglio Nazionale Delle Ricerche (CNR), Italy	56
25	Luca De Vito	University of Sannio, Italy	55
	Lihui Peng	Tsinghua University, China	55
27	Kamel Haddadi	University of Lille, France	54
28	Mihaela Albu	Politehnica University of Bucharest, Romania	53
29	Jing Lei	North China Electric Power University, China	52
30	Paolo Castello	University of Cagliari, Italy	51

31	José Antonio de la O Serna	Autonomous University of Nuevo León, Mexico	50
	José Ismael de la Rosa Vargas	Autonomous University of Zacatecas, Mexico	50
33	Edoardo Fiorucci	University of L'Aquila, Italy	49
34	Zhang Cao	Beihang University, China	48
35	Sebastian Budzan	Silesian University of Technology, Poland	47
	Xuefeng Chen	Xi'an Jiaotong University, China	47
	Lorenzo Ciani	University of Florence, Italy	47
	Dominique Dallet	University of Bordeaux, France	47
	Yavuz Ege	Balıkesir University, Turkey	47
	Sakol Julrat	U.S. National Poultry Research Center, USA	47
	Marco Pau	RWTH Aachen University, Germany	47
	Shibin Wang	Xi'an Jiaotong University, China	47
43	Paolo Carbone	University of Perugia, Italy	46
44	Giovanni Bucci	University of L'Aquila, Italy	45
	Antonio Cataliotti	University of Palermo, Italy	45
	Dong Wang	Shanghai Jiao Tong University, China	45
47	Giovanni Betta	University of Cassino and Southern Lazio, Italy	44
	Guido De Angelis	Regione Umbria, Italy	44
	Roberto Ferrero	University of Liverpool, UK	44
	Shisong Li	Bureau International des Poids et Mesures (BIPM), France	44
	Daniel Slomovitz	National Administration of Power Plants and Electrical Transmissions, Uruguay	44
52	Paul Annus	Tallinn University of Technology, Estonia	43
	Krzysztof Duda	AGH University of Science and Technology, Poland	43
	Nicola Giaquinto	Polytechnic University of Bari, Italy	43
	Jiabin Jia	The University of Edinburgh, UK	43
	Ferdinanda Ponci	RWTH Aachen University, Germany	43
57	Bruno Andò	University of Catania, Italy	42
	Torsten Funck	Physikalisch-Technische Bundesanstalt (PTB), Germany	42
	Qingmin Li	North China Electric Power University, China	42
	Helko Van den Brom	VSL Dutch Metrology Institute, The Netherlands	42
61	Mohamed Abou-Khousa	Khalifa University of Science and Technology, United Arab Emirates	41
	Sasan Bakhtiari	Argonne National Laboratory, USA	41
	Emanuele Piuzzi	Sapienza University of Rome, Italy	41
64	Mauro D'Arco	University of Naples Federico II, Italy	40
	Mehdi Davoudi	Buein Zahra Technical University, Iran	40
	Luigi Ferrigno	University of Cassino and Southern Lazio, Italy	40
	Marco Laracca	University of Cassino and Southern Lazio, Italy	40
68	Qingzhong Cai	Beihang University, China	39
	Ganeshkumar Deivasikamani	P. A. College of Engineering, India	39
	Javad R. Gatabi	SeekOps Inc., USA	39
	Yonghui Hu	North China Electric Power University, China	39
	Consolatina Liguori	University of Salerno, Italy	39
	Dario Petri	University of Trento, Italy	39
	Sergio Toscani	Polytechnic University of Milan, Italy	39

Top 70 most-productive Associate Editors in the past seven years

Rank	Name	Organization	Papers handled
1	Dario Petri	University of Trento, Italy	549
2	Amitava Chatterjee	Jadavpur University, India	528
3	Jesús Ureña	University of Alcalá, Spain	436
4	Carlo Muscas	University of Cagliari, Italy	428
5	Wendy Van Moer	M&WTechnics BVBA, Belgium	420
6	Branislav Djokic	National Research Council, Canada	414
7	Salvatore Baglio	University of Catania, Italy	385
8	Domenico Grimaldi	University of Calabria, Italy	372
9	Edoardo Fiorucci	University of L'Aquila, Italy	366
10	Subhas Mukhopadhyay	Macquarie University, Australia	364

11	George Xiao	National Research Council, Canada	357
12	Kurt Barbé	Vrije Universiteit Brussel, Belgium	336
13	Huang-Chen Lee	National Chung-Cheng University, Taiwan	291
14	Zheng Liu	University of British Columbia, Canada	288
15	V.R. Singh	National Physical Laboratory, India	260
16	John Lataire	Vrije Universiteit Brussel, Belgium	240
17	Ruqiang Yan	Xi'an Jiaotong University, China	236
18	Mohamed Abou-Khousa	Khalifa University of Science and Technology, United Arab Emirates	227
19	Yong Yan	University of Kent, UK	221
20	Niclas Bjorsell	University of Gävle, Sweden	210
21	Vedran Bilas	University of Zagreb, Croatia	182
	Shervin Shirmohammadi	University of Ottawa, Canada	182
23	Sergey Kharkovsky	University of Western Sydney, Australia	179
	John Sheppard	Montana State University, USA	179
25	Anirban Mukherjee	Indian Institute of Technology Kharagpur, India	171
26	Emanuele Zappa	Polytechnic University of Milan, Italy	166
27	Bruno Andò	University of Catania, Italy	165
28	Roberto Ferrero	University of Liverpool, UK	159
	Antonios Tsourdos	Cranfield University Defence Academy of the United Kingdom, UK	159
30	Chao Tan	Tianjin University, China	157
	Wuqiang Yang	University of Manchester, UK	157
32	Jochen Lang	University of Ottawa, Canada	156
33	Datong Liu	Harbin Institute of Technology, China	152
34	Matteo Pastorino	University of Genoa, Italy	150
35	Samir Trabelsi	United States Department of Agriculture, USA	132
36	Thomas Lipe	National Institute of Standards Technology (NIST), USA	131
37	Daniele Fontanelli	University of Trento, Italy	129
38	Serge Demidenko	Massey University, New Zealand	127
39	Mark Yeary	University of Oklahoma, USA	126
40	Sabrina Grassini	Polytechnic University of Turin, Italy	123
41	Eduardo Cabal-Yepez	University of Guanajuato, Mexico	116
42	Sasan Bakhtiari	Argonne National Laboratory, USA	112
	Lihui Peng	Tsinghua University, China	112
44	Lorenzo Ciani	University of Florence, Italy	111
45	Shutao Li	Hunan University, China	110
46	Yuhua Cheng	University of Electronic Science and Technology of China, China	108
47	Christoph Baer	Ruhr-Universität Bochum, Germany	105
48	He Wen	Hunan University, China	103
49	Ada Fort	University of Siena, Italy	100
	Weiwen Liu	Shanghai Jiao Tong University, China	100
51	Loredana Cristaldi	Polytechnic University of Milan, Italy	95
52	Dimitrios Georgakopoulos	National Measurement Institute (NMI), Australia	92
53	Behnood Ghamsari	National Research Council, Canada	87
54	Theodore Laopoulos	Aristotle University of Thessaloniki, Greece	82
	Adam Polak	Wroclaw University of Science and Technology, Poland	82
56	Deniz Gurkan	University of Houston, USA	78
	Massimo Lazzaroni	University of Milan, Italy	78
58	Zhigang Liu	Southwest Jiaotong University, China	77
59	Fabricio Guimaraes Baptista	São Paulo State University, Brazil	76
60	Seyed Hossein Hesamedin Sadeghi	Amirkabir University of Technology, Iran	71
61	Yuya Koyama	Chiba Institute of Technology, Japan	66
62	Kamel Haddadi	University of Lille, France	64
63	Gaigai Cai	Xidian University, China	62
64	Ferran Reverter	Polytechnic University of Catalonia, Spain	60
65	Boby George	Indian Institute of Technology Madras, India	58
	V. Jagadeesh Kumar	Indian Institute of Technology Madras, India	58
	Reza Zoughi	Iowa State University, USA	58
68	Daniel Belega	Politehnica University Timisoara, Romania	57
	Yuri Alvarez Lopez	Universidad de Oviedo, Spain	57
70	José Miguel Dias Pereira	Polytechnic Institute of Setúbal, Portugal	56